



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,802	06/27/2005	Nicholas James Adams	TS5580US	9940
7590 Jennifer D Adamson Shell Oil Company Intellectual Property P O Box 2463 Houston, TX 77252-2463			EXAMINER SINGH, PREM C	
			ART UNIT 1764	PAPER NUMBER
			MAIL DATE 05/02/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/520,802

Applicant(s)

ADAMS ET AL.

Examiner

Prem C. Singh

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 03/01/2007.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berlowitz et al (US Patent 6,475,960).

5. With respect to claim 1, Berlowitz invention discloses a process to produce premium synthetic lubricant base stocks derived from waxy Fischer-Tropsch (FT) hydrocarbons. The process comprises:

(a) "Hydroisomerizing and dewaxing waxy, highly paraffinic FT hydrocarbons".

(Column 2, lines 12-14).

(b) "After the waxy feed has been hydroisomerized, the hydroisomerate is typically sent to a fractionator to remove the 650-750°F-boiling fraction." (Column 3, lines 60-62).

(c) "The remaining 650-750°F+ hydroisomerate is dewaxed to reduce its pour point." (Column 3, lines 63-64).

(d) "Fractionating the 650-750°F+ dewaxate to form two or more fractions of different viscosity as the base stocks." (Column 2, lines 24-26).

Berlowitz further discloses the initial boiling point of the waxy feed in the range of 650 to 750°F and the final boiling point above 1050°F (see column 9, lines 23-28).

Although Berlowitz does not specifically mention that the percentage of fraction boiling above 540°C (1004°F) is at least 20 wt %, the invention does disclose in Table 6 (Column 13, lines 19- 20), that the percentage above 700°F is 70.9 and the percentage above 1050°F is 6.8. Thus, the percentage above 1004°F must be similar to the claimed (20%) percentage.

Berlowitz also discloses the physical properties of the dewaxate obtained by 700°F+ hydroisomerate in Table 9 (Column 14, lines 15-16) showing kinematic viscosity at 100°C = 5.22 cSt.

Although Berlowitz does not disclose the heavy dewaxate with kinematic viscosity of about 15 cSt at 100°C, the invention does show the availability of 1050°F+ feed component (see Table 6, column 13, line 20) which is not being used in the dewaxing process. Berlowitz adds, "If desired, the entire hydroisomerate may be dewaxed." (Column 3, lines 65-66). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and take the 1050°F+ feed component to a similar dewaxing process (as used for the 750°F+ feed) and produce a dewaxate with kinematic viscosity of about 15 cSt at 100°C and thus to produce more lube base stock and properly utilize the entire feed from the FT synthesis.

6. With respect to claim 2, Berlowitz discloses the cut point at least about 1050°F, preferably above 1050°F (see column 9, lines 27-28).

7. With respect to claims 3 and 14, although Berlowitz does not specifically mention about the fraction above 540°C (1004°F) but the invention does mention 700°F+ fraction and 1050°F+ fraction (see Table 6, column 13, lines 19-20). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and determine the percentage of 1004°F fraction for producing a heavy lube stock.

Art Unit: 1764

8. Claims 4, 15, and 20 have all the limitations of claim 1 and discussed before.

9. With respect to claims 5 and 16, Berlowitz discloses, "Fractionating the 650-750°F+ dewaxate to form two or more fractions of different viscosity as the base stocks." (Column 2, lines 24-26). Although Berlowitz does not specifically mention about the base stock having kinematic viscosity between 7 and 15 cSt, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and isolate the fraction having kinematic viscosity between 7 and 15 cSt at 100°C for use as a heavy lube stock.

10. With respect to claim 6, although Berlowitz does not disclose simultaneous dewaxing of light and heavy fractions, the invention does mention, "If desired, the entire hydroisomerate may be dewaxed." (Column 3, lines 65-66). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and conduct simultaneous dewaxing of light and heavy fractions in two different reactors to utilize all the feed and make the process more economical by producing light and heavy lube base stocks simultaneously.

11. With respect to claims 7-9 and 17, Berlowitz discloses that the invention is not limited to the use of any particular catalyst, but may be practiced with any dewaxing catalyst including shape selective molecular sieves, comprising of TON with a noble metal, preferably, platinum (see column 7, lines 63-67; column 8, lines 1-10).

Art Unit: 1764

12. With respect to claim 10, Berlowitz discloses using TON and other molecular sieves with platinum, but does not specifically mention using MTW molecular sieve (see column 8, lines 1-10). But, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and conduct dewaxing reaction with MTW molecular sieve because it is expected that the use of any equivalent molecular sieve with platinum will be effective for proper dewaxing reactions. See *In Re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979).

13. Claim 11 has all the limitations of claims 6 and 10, and discussed before. The claim has a further limitation of using a silica binder.

Although Berlowitz does not disclose using silica binder, the invention does disclose using an inert alumina binder (see column 13, lines 60-62). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and conduct dewaxing reaction on a molecular sieve catalyst with silica binder because both silica and alumina are functionally equivalent. See *In Re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979).

14. Claims 12 and 18 have all the limitations of claims 1 and 6, and discussed before. In addition, the claim requires heavy base oil precursor to be reduced in pour point and then to be taken to the dewaxing step.

Berlowitz discloses that 700°F+ hydroisomerate is dewaxed to reduce the pour point (see column 13, lines 57-59). It is to be noted that the feed also has a component

Art Unit: 1764

1050°F+ fraction (see Table 6, column 13, lines 19-20). Also, since Berlowitz suggests that entire hydroisomerate can be dewaxed, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and take the heavy (1050°F+) fraction, reduce the pour point, and then send to dewaxing step as discussed under claim 6. This will reduce the pour point of the heavy fraction and facilitate the dewaxing step in the downstream operation. Also, one skilled in the art will use zeolites from the list suggested by Berlowitz (see column 8, lines 1-10) for pour point reduction and subsequent dewaxing. Any zeolite, including the claimed 12-member and 10-member ring zeolites can be used because they are functionally similar to the ones disclosed by Berlowitz.

15. Claims 13 and 19 have all the limitations of claims 1,6, and 12, and discussed before. Additionally, the claims require pour point of the heavy fraction after first dewaxing step.

Although Berlowitz does not disclose the pour point, it would have been obvious to one skilled in the art at the time the invention was made to modify Berlowitz invention and specify the pour point of the heavy fraction to determine the extent of dewaxing already done and the extent needed in the second step.

Response to Arguments

16. Applicant's arguments filed 03/02/2007 have been fully considered but they are not persuasive.

17. The Applicant argues that the present invention differs from the Berlowitz process in that the feedstock is separated into a light base oil precursor fraction and a heavy base oil precursor fraction prior to the dewaxing step. These fractions are then separately dewaxed. As taught beginning at the bottom of page 2 of the specification, "A further advantage of dewaxing the light and heavy base oil precursor fractions separately is that the pour points of the resulting light and heavy base oils can be targeted to their most optional value. If no separate dewaxing is used, the pour point of one grade will then be the resultant of the pour point of the other grade." In the Berlowitz process, the feedstock is dewaxed prior to being fractionated into the different viscosity base stocks. See column 2, lines 16 to 26 and col. 7, lines 31-51. In Berlowitz the 650-750°F+ fraction is dewaxed and then fractionated to produce the different base stocks. There is no teaching or suggestion in Berlowitz to fractionate this portion of the feedstock into a light base oil precursor and a heavy base oil precursor and then separately dewax these precursors prior to isolating the desired base oil products.

The Applicant's argument is not persuasive because Berlowitz produces two main products: a 700°F+ fraction going for hydroisomerization and then dewaxing (See

Art Unit: 1764

Table 6, column 13, lines 9-11 and 57-59) and a 1050°F+ fraction (See Table 6, column 13). Berlowitz also discloses that the dewaxed oil from 700°F+ fraction has kinematic viscosity at 100°C of 5.22 cSt (See Table 9, column 14). This dewaxed oil corresponds to the Applicant's light base oil.

Berlowitz further discloses waxy feed having T_{10} and T_{90} temperature spreads of as much as 490°F and even 600°F, having more than 10 wt% of 1050°F+ material and even more than 15 wt% of 1050°F+ material (See column 9, lines 37-44). "Both of these waxy feeds were suitable for use in the process of the invention." (Column 9, lines 49-50). Thus, it would have been obvious to one skilled in the art at the time the invention was made to use this high boiling stream (which amounts to about 15 wt%) for dewaxing and produce a heavy lube base stock with kinematic viscosity as claimed.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 7:00 AM-3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS 1042307



Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700